

REMARKS/ARGUMENTS

Claims 1-40 are pending in the present application.

This Amendment is in response to the Final Office Action mailed July 22, 2008 and to support a Request for Continued Examination (RCE) filed concurrently. In the Final Office Action, the Examiner rejected claims 25 (26-36) under 35 U.S.C. § 101; claims 25-36 under 35 U.S.C. § 112; claims 1, 3-8, and 10-13, 15-20, and 22-25, 27-32, and 34-36 under 35 U.S.C. § 102(e); and claims 2, 9, 14, 21, 26, and 33 under 35 U.S.C. § 103(a). Applicant has amended claims 1, 11, 13, 23, 25, 35, and 37. Reconsideration in light of the amendments and remarks made herein is respectfully requested.

Rejection Under 35 U.S.C. § 101

In the Final Office Action, the Examiner rejected claims 25-36 under 35 U.S.C. § 101. The Examiner contends that Claim 25 is non-statutory because a “medium” cannot include “data” and as a result the medium is just instructions. Applicant respectfully disagrees for the following reasons.

First, the Examiner merely asserts that a “medium” cannot include “data” without providing any logical explanation. The Examiner then concludes that as a result the medium is just instructions. A medium such as a storage medium clearly can store data or information including instructions which can be executed by a machine. The Examiner’s conclusion that the medium is just instructions is therefore improper.

Second, claim 25 recites, among other things, “a machine-accessible medium including data that, when accessed by a machine, causes the machine to perform operations comprising:”. Accordingly claim 25 stores instructions that causes the machine to perform operations when accessed by a machine. The claim therefore defines the structural element of the data embodied in the machine-accessible medium.

Third, claims should be interpreted consistently with the specification, which provides content for the proper construction of the claims because it explains the nature of the patentee’s invention. See *Renishaw PLC v. Marposs Societa’ per Azioni*, 158 F.3d 1243, 1250, 48 USPQ 2d (BNA) 1117 (Fed. Cir. 1998). MPEP 2111. The article of manufacture and the machine-accessible medium claim language is fully supported in the specification. See, for example,

paragraphs [0108] – [0109]. The specification provides for the alternative embodiments that medium that can store, transmit, or transfer information. The specification further provides that the term “data” here refers to any type of information that can be encoded for machine-readable purposes and may include program, code, data, file, etc.

However, in the interest of expediting prosecution of the application, Applicant has amended claim 25 to read “a machine-accessible storage medium”. Accordingly, Applicant respectfully requests the rejection under 35 U.S.C. §101 be withdrawn.

Rejection Under 35 U.S.C. § 112

In the Final Office Action, the Examiner rejected claims 25-36 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. The Examiner contends that claim 25 is vague and indefinite because it is unclear how a medium can include data. Applicant respectfully disagrees for the following reasons.

As discussed above in the 35 U.S.C. §101 rejection, a medium can clearly include data. A medium may be an electronic circuit, a memory, a storage element. Accordingly, a medium can store data.

Furthermore, as discussed above, claims should be interpreted consistently with the specification, which provides content for the proper construction of the claims because it explains the nature of the patentee's invention. See *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243,1250, 48 USPQ 2d (BNA) 1117 (Fed. Cir. 1998). MPEP 2111. The article of manufacture and the machine-accessible medium claim language is fully supported in the specification. See, for example, paragraphs [0108] – [0109]. The specification provides for the alternative embodiments that medium that can store, transmit, or transfer information. The specification further provides that the term “data” here refers to any type of information that can be encoded for machine-readable purposes and may include program, code, data, file, etc.

Moreover, the general test for determining whether a claim meets the definiteness requirement is whether one skilled in the art would understand the bounds of the claim when read in light of the specification. *Process Control Athletic Alternatives, Inc. v. Prince Manufacturing, Inc.*, 73 F.3d 1573, 1581. The Examiner has not shown that one skilled in the art

would not understand the bounds of the claim when read in light of the specification. The Examiner merely asserts the Examiner's personal opinion without showing that this personal opinion represents that of a person skilled in the art at the time of the invention.

However, in the interest of expediting prosecution of the application, Applicant has amended claim 25 to read "a machine-accessible storage medium". Accordingly, Applicant respectfully requests the rejection under 35 U.S.C. §112 be withdrawn.

Rejection Under 35 U.S.C. § 102

In the Final Office Action, the Examiner rejected claims 1, 3-8, and 10-13, 15-20, and 22-25, 27-32, and 34-36 under 35 U.S.C. §102(e) as being anticipated by U.S. Publication No. 2004/0174829 issued to Ayyagari ("Ayyagari"). Applicant respectfully traverses the rejection and submits that the Examiner has not met the burden of establishing a prima facie case of anticipation.

Ayyagari discloses a centralized network organization and topology discovery in ad-hoc network with central controller. The network in its operational mode consists of host nodes, a designated controller for the network called the Central Coordinator (CCo), and where appropriate, a set of Proxy Coordinators (PCo) to communicate with nodes that cannot directly communicate (in one link) with the CCo, or with other nodes in the network (Ayyagari, par. [0025]). The CCo periodically initiates a node discovery process. Every known node is allowed to transmit a DISCOVERY_MSG message in a contention free mode, using an allocation (frequencies and time slots) granted by the CCo. The DISCOVERY_MSG can simply contain the MAC address/TEI (Temporary Equipment Identifier) of the source device, or it may also contain the Frame number and time slots for future contention periods that follow the end of the Discovery interval (Ayyagari, par. [0055], lines 1-9). Activity Indicator is an optional parameter indicating how busy a device is, in terms of its duty cycle (Ayyagari, par. [0064], lines 12).

Ayyagari does not disclose, either expressly or inherently, at least one of: (1) a frame module to process a frame containing information regarding a local node in a first network, the information including discovery information and network state information, the discovery information being represented in a common description, the network state information including at least one of network configuration, network status, and network history; (2) an information

module coupled to the frame module to manage the information; and (3) a communication module coupled to the frame module and the information module to manage communication between the local node and a remote node in a second network using the information, as recited in claim 1.

First, Ayyagari merely discloses the START_DISCOVERY_MSG transmitted by the CCo to indicate the beginning of a DISCOVERY period (Ayyagari, par. [0060]) and the CCO_NETCONFIG_MSG transmitted by a new device that has been selected as the new CCo or by the current CCo itself after network organization is completed (Ayyagari, par. [0070]), not a frame module to process a frame containing information regarding a local node in a first network, the information including discovery information and network state information. As discussed above, the information in the DISCOVERY_MSG and the CCO_NETCONFIG_MSG are not contained within a single frame. Thus, there is no teaching of “a frame containing information... including discovery information and network state information.”

Second, Ayyagari merely discloses every other node listening to DISCOVER_MSG transmissions and updating its DISCOVERED_NODE_LIST (Ayyagari, par. [0055]) and the topology table of the CCo being a tabulation of the DISCOVERED_NODE_LISTS for all nodes (Ayyagari, par. [0076]), not an information module to manage the information, as recited in claim 1. As discussed above, given that the Examiner alleges the network information is contained in the CCO_NETCONFIG_MSG, CCo cannot be the information module since the topology table does not account for the CCO_NETCONFIG_MSG information.

Furthermore, the Examiner interprets the CCo as the frame module and as the information module (Final Office Action, page 4). However, the CCo cannot be both frame module and information module because they perform different functions as discussed above.

Third, Ayyagari merely discloses viable interconnections between nodes relating to two illustrative organizations, such as interconnection 40 between C and D (Ayyagari, par. [0043], lines 7-10; Fig. 1, ref. 40), not a communication module coupled to the frame module and the information module to manage communication using the information, as recited in claim 1. A viable interconnection is a communication link that may be created between nodes C and D. In contrast, communication module 230 manages communication between the IW node and a remote node in a second IW network and receives the IW information from the information

module 220 (See, for example, Specifications, par. [0035]). A communication link is merely a connection to connect two nodes. It does not have the ability to manage the communication between the two nodes.

In the Final Office Action, the Examiner contends that the term “network state information” is not further specified, and therefore is broadly interpreted as any network state information (Final Office Action, page 10, paragraph 10). The Examiner cited paragraph [0064] and the activity indicator to support the Examiner’s argument. Applicant respectfully submits that the cited paragraph does not provide such support. For ease of reference, the cited paragraph is copied below.

“[0064] This message is broadcast by each node as a part of the DISCOVERY process. The message contains the MAC address or TEI of the transmitting device. The message also contains the allocations for Contention Channels that will follow the end of the topology discovery period. This information is derived by the node from the START_DISCOVERY_MSG. This information allows hidden nodes, i.e., nodes that cannot hear the CCo but can hear one of the DISCOVERY_MSG messages, an opportunity to communicate with the device transmitting the discovery message, and the CCo through that device. **An Activity Indicator is an optional parameter indicating how busy a device is, in terms of its duty cycle.** If a device is not transmitting or receiving data this value is 0. The architecture, or format, of a discovery message is shown in FIG. 5.” (Ayyagari, Paragraph [0064]. Emphasis added.)

In the Final Office Action, the Examiner contends that an activity indicator (Ayyagari, Paragraph [0064], lines 11-13) in the Discovery Message is interpreted broadly as the “network state information” (Final Office Action, page 10, paragraph 10). However, as seen from the above excerpt, the “activity indicator” is merely a parameter that indicates how busy a device is, in terms of its duty cycle. In contrast, the “network state information” refers to the network configuration, status, and history. A network configuration is different than the activity indicator in several aspects. First, it is not about how busy a device is, but it is about how the network is configured. Second, it characterizes the network, not an individual device. An activity indicator is associated with a single device. In fact, the entire Discovery Message is related to the individual device, and not about the network.

In rejecting claims 11, 23, and 35, the Examiner contends that teaches the network state information includes at least one of network configuration, network status, network history, and an interference list. The Examiner cited paragraphs [0070], and [0064, line 12] to support the Examiner's argument. Applicant submits that the cited paragraphs do not provide such support. For ease of reference, paragraph [0070] is copied below. Paragraph [0064] is copied and discussed above.

"[0070] This message is transmitted by a new device that has been selected as the CCo, or by the current CCo itself, **after network organization is completed**. The format of this message is shown in FIG. 8. The CCo_NETCONFIG_MSG message **confirms the identity of the CCo, and informs the network of the identities of those nodes that have been designated as Proxy Nodes** by the CCo, as well as the identities of the Hidden Nodes that will be served by each Proxy Node." (Ayyagari, Paragraph [0064]. Emphasis added.)

As seen from the above, merely discloses the message confirms the identity of the CCo and informs the network of the identities of those nodes that have been designated as Proxy Nodes. None of this is related to the network configuration, status, or history.

In the Final Office Action, the Examiner further contends that the term "managing the information" is not further defined, and therefore is broadly interpreted as any information being managed/processed (Final Office Action, page 10, paragraph 11). The Examiner cited paragraphs [0076] – [0079] and the topology table to support the Examiner's argument. Applicant respectfully submits that the cited paragraphs do not provide such support. For ease of reference, the cited paragraphs are copied below.

"[0076] The topology table of the CCo, say Node A, in FIG. 1, is a tabulation of the DISCOVERED_NODE_LISTS for all nodes that have associated with the network, either as hidden nodes or as nodes that are a part of the main network. An example of a TOPOLOGY_TABLE derived from FIG. 1 is shown in FIG. 10.

[0077] The topology table for Node A consists of its own discovered nodes list (A, B, C) in the first column. Since Node A is also the CCo, this node maintains the Discovered Node Lists of the Hidden Nodes (D, E) as well. The rows in this table correspond to the discovered node lists received from each of these nodes. For example, the DISCOVERED_NODE_LIST of Node A is (A, B, C). That of Node C is (A, B, C, D, E).

[0078] The table of FIG. 10 has been constructed further to illustrate that it may be possible that node B can hear node C, but that node C might not be able to hear node B. This implies that the link between nodes B and C is not operational in both directions (i.e., is non-bi-directional) and hence is not a valid link. This condition is illustrated by (X) in the Discovered Node List from node B in Node A's Topology Table. Node B does show up in node C's list.

[0079] **The TOPOLOGY TABLE may also keep track of the Device Class of each node that has been discovered if such a scheme is implemented by the system.** Additional information, such as the quality/capacity of each link, may also be maintained in each entry for the Discovered Node List.” (Ayyagari, Paragraphs [0076] – [0079]. Emphasis added.)

As seen from the above paragraphs, the topology table is merely a tabulation of the discovered node lists for all nodes that are associated with the network (Ayyagari, Paragraph [0076], lines 1-4). In contrast, managing the information includes collecting the network state information, synchronizing the collected information, and updating the information table. In other words, the information here refers to the network information, and not a list of discovered node.

To anticipate a claim, the reference must teach every element of the claim. “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Vergeal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ 2d 1051, 1053 (Fed. Cir. 1987). “The identical invention must be shown in as complete detail as is contained in the...claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ 2d 1913, 1920 (Fed. Cir. 1989). Since the Examiner failed to show that Ayyagari teaches or discloses any one of the above elements, the rejection under 35 U.S.C. §102 is improper.

Therefore, Applicant believes that independent claims 1, 13, 25, and 37 and their respective dependent claims are distinguishable over the cited prior art references. Accordingly, Applicant respectfully requests the rejection under 35 U.S.C. §102(e) be withdrawn.

Rejection Under 35 U.S.C. § 103

In the Final Office Action, the Examiner rejected claims 2, 9, 14, 21, 26, and 33 under 35 U.S.C. § 103(a) as being unpatentable over Ayyagari in view of U.S. Publication No. 2005/0073979 issued to Barber et al. ("Barber"). Applicant respectfully traverses the rejection and submits that the Examiner has not met the burden of establishing a *prima facie* case of obviousness.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *MPEP § 2143, p. 2100-126 to 2100-130 (8th Ed., Rev. 5, August 2006)*. Applicant respectfully submits that there is no suggestion or motivation to combine their teachings, and thus no *prima facie* case of obviousness has been established.

Furthermore, the Supreme Court in *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966), stated: "Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined." *MPEP 2141*. In *KSR International Co. vs. Teleflex, Inc.*, 127 S.Ct. 1727 (2007) (Kennedy, J.), the Court explained that "[o]ften, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue." The Court further required that an explicit analysis for this reason must be made. "[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *KSR 127 S.Ct.* at 1741, quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006). In the instant case, Applicant respectfully submits that there are significant differences between the cited references and the claimed invention and there is no apparent

reason to combine the known elements in the manner as claimed, and thus no *prima facie* case of obviousness has been established.

Ayyagari discloses a centralized network organization and topology discovery in ad-hoc network with central controller as discussed above.

Barber discloses a visitor gateway in a wireless network. The 802.11 MAC defines special functional behavior for fragmentation of packets, medium reservation via RTS/CTS (request-to-send/clear-to-send) polling interaction, and point coordination (for time-bounded services) (Barber, par. [0012]).

Ayyagari and Barber, taken alone or in any combination, do not disclose or render obvious (1) a frame module to process a frame containing information regarding a local node in a first network, the information including discovery information and network state information, the discovery information being represented in a common description, the network state information including at least one of network configuration, network status, and network history; (2) an information module coupled to the frame module to manage the information; (3) a communication module coupled to the frame module and the information module to manage communication between the local node and a remote node in a second network using the information, as recited in claim 1; (4) a frame builder to build the frame containing the information; (5) a frame transmitter coupled to the frame builder to transmit the frame to another local node in the first network or the remote node in the second network; (6) a frame poller coupled to the frame transmitter to provide a polling frame requesting for information of the remote node; and (7) a frame receiver to receive another frame from another local node in the first network or to receive a remote frame from the remote node, as recited in claims 2, 14, and 26.

Ayyagari merely discloses the DISCOVERY_MSG broadcast by the nodes and CCO_NETCONFIG_MSG transmitted by the CCo or a new device selected as CCo (Ayyagari, par. [0057-0064]; par. [0070]), not a frame builder to build the frame containing the information. As above, Ayyagari does not disclose a frame containing information... including discovery information and network state information, let alone, a frame builder to build the frame, a frame transmitter to transmit the frame, or a frame receiver to receive another frame, as recited in claims 2, 14, and 26.

In addition, with respect to the frame transmitter, Ayyagari merely discloses the BEACON_MSG being transmitted by the CCo periodically (Ayyagari, par. [0058]). The BEACON_MSG carries the identity of the transmitting device and may include the START_DISCOVERY_MSG (Ayyagari, par. [0058-0060]). Since the BEACON_MSG does not include the network state information, allegedly the CCO_NETCONFIG_MSG, or the discovery information, allegedly the DISCOVERY_MSG, the BEACON_MSG cannot be the frame transmitted by the frame transmitter. Moreover, the Examiner alleges that the CCo is the frame transmitter (Final Office Action, page 8, paragraph 0). Previously, the Examiner alleged that the CCo was also the frame module and the information module. Each of these modules performs different functions such that they cannot all be the same module.

As discussed above, Ayyagari does not disclose or render obvious elements (1)-(3) as above. Accordingly, a combination of Ayyagari with any other references in rejecting claims 2, 9, 14, 21, 16, and 33, which depend on claims 1, 13, and 25, respectively, is improper.

Furthermore, Barber merely discloses that MAC defines special functional behavior for fragmentation of packets, medium reservation via RTS/CTS polling interaction (Barber, par. [0012], lines 17-20), or tunnel 1204 packages up traffic between visitor clients (Barber, par. [0103], lines 6-7), not a frame poller to provide a polling frame requesting for information of the remote node, or a frame transmitter to transmit the frame to another local node in the first network or the remote node in the second network, or a frame receiver to receive another frame from another local node in the first network or to receive a remote frame from the remote node.

The RTS/CTS protocol is merely used to reduce frame collisions. The RTS (request to send) frame is used to initiate a data transmission. The CTS (Clear to Send) is a reply to the RTS from the destination. The RTS/CTS protocol therefore merely involves two nodes that wish to transmit and receive frames. It does not involve requesting discovery information. Regarding the tunnel, it merely transports traffic to a firewall to allow a visitor client to access the Internet (Barber, par. [0103], lines 7-10). It does not transmit or receive a frame as recited in claims 2, 14, and 26. In fact, Barber specifically discloses that the tunnel does not send or receive traffic to or from the LAN (Barber, par. [0103], lines 10-11). Accordingly, Barber teaches away from the invention because traffic is not sent or received to or from the LAN.

The Examiner failed to establish a prima facie case of obviousness and failed to show there is teaching, suggestion, or motivation to combine the references. When applying 35 U.S.C. 103, the following tenets of patent law must be adhered to: (A) The claimed invention must be considered as a whole; (B) The references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination; (C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and (D) Reasonable expectation of success is the standard with which obviousness is determined. *Hodosh v. Block Drug Co., Inc.*, 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986). "When determining the patentability of a claimed invention which combined two known elements, 'the question is whether there is something in the prior art as a whole suggest the desirability, and thus the obviousness, of making the combination.'" *In re Beattie*, 974 F.2d 1309, 1312 (Fed. Cir. 1992), 24 USPQ2d 1040; *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1462, 221 USPQ (BNA) 481, 488 (Fed. Cir. 1984). To defeat patentability based on obviousness, the suggestion to make the new product having the claimed characteristics must come from the prior art, not from the hindsight knowledge of the invention. *Interconnect Planning Corp. v. Feil*, 744 F.2d 1132, 1143, 227 USPQ (BNA) 543, 551 (Fed. Cir. 1985). To prevent the use of hindsight based on the invention to defeat patentability of the invention, this court requires the Examiner to show a motivation to combine the references that create the case of obviousness. In other words, the Examiner must show reasons that a skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the prior elements from the cited prior references for combination in the manner claimed. *In re Rouffet*, 149 F.3d 1350 (Fed. Cir. 1996), 47 USPQ 2d (BNA) 1453. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or implicitly suggest the claimed invention or the Examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." *Ex parte Clapp*, 227 USPQ 972, 973. (Bd.Pat.App.&Inter. 1985). The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Furthermore, although a prior art device "may be capable of

being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so.” *In re Mills*, 916 F.2d at 682, 16 USPQ2d at 1432; *In re Fritch*, 972 F.2d 1260 (Fed. Cir. 1992), 23 USPQ2d 1780.

Moreover, the Examiner failed to establish the factual inquires in the three-pronged test as required by the *Graham* factual inquires. There are significant differences between the cited references and the claimed invention as discussed above. Furthermore, the Examiner has not made an explicit analysis on the apparent reason to combine the known elements in the fashion in the claimed invention. Accordingly, there is no apparent reason to combine the teachings of Ayyagari and Barber.

In the present invention, the cited references do not expressly or implicitly disclose any of the above elements. In addition, the Examiner failed to present a convincing line of reasoning as to why a combination of Ayyagari and Barber is an obvious application of inter-wireless interactions using user discovery for AD-HOC environments, or an explicit analysis on the apparent reason to combine Ayyagari and Barber in the manner as claimed.

Therefore, Applicant believes that independent claims 1, 13, 25, and 37 and their respective dependent claims are distinguishable over the cited prior art references. Accordingly, Applicant respectfully requests the rejection under 35 U.S.C. §103(a) be withdrawn.

Conclusion

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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